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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,532	10/02/2001	Jiro Yamada	09794353-001	4317

7590 04/22/2005

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EXAMINER

HODGES, MATTHEW P

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/889,532	Applicant(s) YAMADA ET AL.	
	Examiner Matt P. Hodges	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-45 and 49-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39, 51 and 52 is/are allowed.
- 6) ☒ Claim(s) 38, 40, 41, 44, 45, 49 and 50 is/are rejected.
- 7) ☒ Claim(s) 42 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The Amendment, filed on 1/18/2005, has been entered and acknowledged by the Examiner.

Cancellation of claims 46-48 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 49 and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically it is unclear to the examiner how the claimed optical path length is physically related to both the spread of the emission spectrum and the difference between the peak wavelength of the spectrum of the light emitted by the device upon a change in the view angle and the peak wavelength of the internal emission spectrum through a simple subtraction of the two values. Further clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 38 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Isaka et al. (US 5,936,347).

Regarding claims 38 and 45, Isaka discloses (see figure 1) a display device including a light-emitting layer (12), between a first electrode (10) of reflective material, and a second electrode (6) of transparent material. The resonant cavity is formed between the first electrode and the semi-reflective mirror (5). (Column 6 lines 37-65). Further the width of the light emitting layer is set according to the equation on Column 5 line 44, which establishes the width to be any integer value that satisfies resonance for the desired color emission. Any integer value here, includes a minimum integer value which would include the positive minimum value.

Claims 40, 41, 44, and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Xu et al. (US 6,133,692).

Regarding claims 40 and 45, Xu discloses (see figure 1) a display device including a light-emitting layer (16), between a first electrode (15) of reflective material, and a second electrode (18) of transparent material. The resonant cavity is formed between the first electrode and the semi-reflective mirror (21) and has an optical length equal to the widths of both the light emitting layer and the second electrode. (Column 2 lines 36-57). The cavity is multi-mode having peaks in the red, green and blue wavelengths. The optical length of the cavity is set to

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integer values of m being much greater than zero as it is multimode and necessarily requires resonance at all three transmitted regions. Therefor in the applicant's equation the value of Q would be much greater than 10.

Regarding claims 41 and 44, Xu further discloses the use of color filters (13) outside the cavities for transmitting the resonated light. (Column 3 lines 33-44). The color filters are optionally passive, working by absorbing all light outside of the desired light to transmit. At each subsection then, the filter allows only one of a red, blue, or green color to be transmitted. (Column 4 lines 1-10). Further the back mirror has only a 74% transmittance. (Column 3 lines 10-15). Thus at each point on the device the surface allows only one of a specified color range to be transmitted and further only reflects 74% of this color range. The end result being a device that reflects less than 30% of the external light.

Allowable Subject Matter

Claim 39, 51 and 52 are allowed.

Claims 42 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 39, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 39, and specifically comprising the limitation of a display device where the optical path length is increased until exactly 4 more resonances for

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green light are included beyond the lowest positive minimum value of the optical path length, during resonance of the that green light.

Regarding claim 42, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 42, and specifically comprising the limitation of a display device where the optical path length is the lowest positive minimum value of the optical path length during resonance for the value of λ and where reflectance of the external light is less than 30%

Regarding claim 43, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 43, and specifically comprising the limitation of a display device where the optical path length is increased until exactly 4 more resonances for green light are included beyond the lowest positive minimum value of the optical path length, during resonance of the that green light and where reflectance of the external light is less than 30%

Regarding claim 51, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 51, and specifically comprising the limitation of a display device where the optical path length is increased until exactly 4 more resonances for green light are included beyond the lowest positive minimum value of the optical path length, during resonance of the that green light.

Regarding claim 52, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 52, and specifically comprising the limitation of a display device where the optical path length is increased until at least 10 more resonances for green light are included beyond the lowest positive minimum value of the optical path length,

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during resonance of the that green light and where the cavity is formed between the interface between the semi-reflective layer and second electrode and the upper edge of the passivation film.

Response to Arguments

Regarding applicants assertion that Isaka does not disclose the use of a optical path length including the positive minimum value, the examiner respectfully disagrees. Isaka discloses the use of a range of optical path lengths satisfying the equation stated where all integer values of M are anticipated. This certainly includes the state of positive minimum value. Further the positive minimum value would be most advantageous to maximize the single color resonance used by Isaka in several examples. The applicant's identification of the values in Column 6 are not considered persuasive as in the same column Isaka discloses that those values are for that "specific embodiment" and do not in the view of the examiner reflect the values of all anticipated embodiments.

Regarding applicant's assertion that the multimode cavity disclosed by Xu does not anticipate the optical path lengths claimed, the examiner respectfully disagrees. While the limited claim of " $m1 + 4$ " (see claim 39) has been allowed the much broader claim limitation of " $m1+q$ " (see claim 40) is not. The latter limitation is anticipated by the multimode device of Xu, where it is advantageous to increase the cavity length to find resonant peaks for all three of red, blue and green lines.

Regarding applicant's assertion that the reflectance of less than 30% is not anticipated by Xu, the examiner respectfully disagrees. The stated rejection has been clarified further.

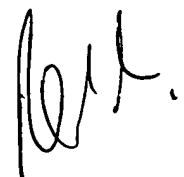
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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